Claims

[c1] 1. A method for controlling a multiple cylinder internal combustion engine, the method comprising:
determining a difference between a first parameter value generated by a control system for the internal combustion engine and a second parameter value determined by a control system monitor;
applying a weighting factor to the difference to generate a weighted difference; and
controlling the engine based on the weighted difference.

[c2] 2.The method of claim 1 wherein the first and second parameter values represent engine torque.

[c3] 3.The method of claim 1 wherein the second parameter value is estimated based on at least engine speed, barometric pressure, and mass airflow.

[c4] 4.The method of claim 1 wherein the step of applying a weighting factor comprises determining a weighting factor based on the difference between the first and second parameter values.

[c5] 5.The method of claim 1 wherein the step of applying a weighting factor comprises determining a weighting factor based on a ratio of the first and second parameter values.

[c6] 6.The method of claim 1 wherein the step of applying a weighting factor comprises determining a weighting factor based on a rate of change of the difference between the first and second parameter values.

[c7] 7.The method of claim 1 wherein the step of applying a weighting factor comprises determining a weighting factor based on a ratio of the first and second parameter values and a rate of change of the difference between the first and second parameter values.

[c8] 8.The method of claim 7 further comprising:
integrating the weighted difference, wherein the step of controlling the engine includes selecting an alternative control strategy when the integrated weighted

difference exceeds a corresponding threshold.

[c9] 9.The method of claim 1 wherein the step of determining a difference comprises determining a second parameter value by estimating the second parameter value based on a plurality of sensor inputs.

[c10] 10.The method of claim 9 wherein the first and second parameter values represent engine brake torque and wherein the plurality of sensor inputs includes a mass airflow input and a barometric pressure input.

[c11] 11.The method of claim 10 wherein the barometric pressure input is generated by a manifold absolute pressure sensor.

[c12] 12. The method of claim 10 wherein the barometric pressure input is generated by a barometric pressure sensor.

[c13] 13. The method of claim 10 wherein the barometric pressure input is generated by an inference based on throttle position, engine speed, cam position and measured airflow.

[c14] 14.The method of claim 1 wherein the step of applying a weighting factor comprises applying a weighting factor to attenuate differences between the first and second parameter values associated with measurement variability of at least one engine sensor.

[c15] 15.The method of claim 1 wherein the step of controlling the engine comprises implementing an alternative control strategy when the weighted difference exceeds a corresponding threshold.

[c16] 16.The method of claim 1 wherein the step of controlling the engine comprises implementing an alternative control strategy when a statistical calculation based on a history of the weighted difference exceeds a corresponding threshold.

[c17] 17.A system for controlling a multiple cylinder internal combustion engine having an electronically controlled throttle valve to modulate intake air in response to a control system parameter, the system comprising:
a controller having control logic for determining a desired engine torque,

determining an actual engine torque, determining a difference between the desired and actual engine torque, applying a weighting factor to the difference to generate a weighted difference, and selecting one of first and second engine control strategies based on the weighted difference.

[c18] 18.The system of claim 17 further comprising:
at least one sensor for providing a sensor signal indicative of a current engine or ambient operating condition in communication with the controller, wherein the controller determines an actual engine torque by estimating actual engine torque based on the sensor signal.

[c19] 19.The system of claim 18 wherein the at least one sensor comprises:
an engine speed sensor, a mass airflow sensor, and a pressure sensor in communication with the controller.

[c20] 20.The system of claim 17 wherein the controller determines the actual engine torque using a monitor to measure engine brake torque.

[c21] 21.The system of claim 17 wherein the controller retrieves the weighting factor from memory based on a percentage difference between the desired engine torque and actual engine torque and based on the rate of change of the difference.

[c22] 22. The system of claim 21 wherein the desired engine torque and actual engine torque correspond to engine brake torque.

[c23] 23.The system of claim 17 wherein the controller determines a desired engine brake torque and determines an actual engine brake torque based on an estimated engine indicated torque and engine torque losses.

[c24] 24.A computer readable storage medium having stored data representing instructions executable by a computer to control a multiple cylinder internal combustion engine having an electronic throttle control system, the computer readable storage medium comprising:
instructions for determining a desired engine torque parameter for use by the electronic throttle control system;

instructions for monitoring the desired engine torque parameter by determining an actual engine torque based on current engine and ambient operating parameters;

instructions for determining a difference between the desired and actual engine torque;

instructions for determining a weighting factor based on the difference and a rate of change of the difference;

instructions for applying the weighting factor to the difference between the desired and actual engine torque to determine a weighted difference; and

instructions for controlling the engine in response to the weighted difference.